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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
FULLER, ERIC B	
ART UNIT	**PAPER NUMBER**
1762	

DATE MAILED: 06/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/744,420	SANDERSON, KEVIN DAVID	
	Examiner	Art Unit	
	Eric B Fuller	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22 and 34-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-22 and 34-44* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 8, 2004 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 8, 10-14, 18, 34, 38 – 40, 42, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Proscia (US 5,286,520) in view of Tracy et al. (US 4,687,560) and Florczak (US 6,268,019 B1).

Proscia teaches a method of coating a glass substrate (column 4, lines 25-30) with a fluorine-doped tungsten oxide layer for producing solar control glass. The process may occur during the well-known float glass process (column 3, lines 45-50). Proscia teaches that trifluoroacetic acid, as the fluoride source for doping, may be

simultaneously added to a gas stream comprising oxygen and tungsten hexafluoride (column 3, line 33). Proscia also teaches a method of entraining the tungsten precursors where nitrogen is used as the carrier gas (column 4, lines 13-22).

The reference fails to explicitly teach the use of a tungsten chloride or an oxyhalide as the tungsten precursor. However, Tracy teaches that either tungsten chloride or tungsten oxytetrachloride may be used as the precursor in place of tungsten hexafluoride for depositing a tungsten oxide film by CVD (column 5, lines 30-40). The pressure of the process taught by Tracy is significantly lower than the atmospheric pressure CVD method taught by Proscia. Therefore, in order to further prove that one would have a reasonable expectation of success, the examiner points to the teachings of Florczak. Florczak teaches an atmospheric pressure CVD method for depositing metal oxide coatings to float glass by decomposing metal chlorides (abstract). From the combined teachings of Tracy and Florczak, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize either tungsten oxytetrachloride or tungsten chloride as the precursor for the process taught by Proscia. By doing so, one would have a reasonable expectation of success, as Tracy teaches the art recognized suitability of suing tungsten chloride or tungsten oxytetrachloride in place of tungsten hexafluoride in a CVD process for depositing tungsten oxides and Florczak teaches process parameters for depositing the equivalent precursors under atmospheric conditions. Florczak teaches the claimed substrate temperature (column 6, lines 45-50) and precursor temperature (column 4, lines 35-40).

As to claim 4, the reference fails to explicitly teach that the tungsten chloride is substituted. However, Tracy does teach that the precursor is either tungsten chloride or tungsten oxyhalide (column 5, lines 15-20). It is the examiner's position that one of ordinary skill in the art would recognize that by the reference teaching that the ligand of the tungsten precursor being capable of being either chloride or an oxyhalide, that it is implied that the oxyhalide substituent and the chloride substituent behave the same way in the reaction-deposition process. Therefore, it would have been obvious that if a tungsten precursor with a chloride ligand may be used, and a tungsten precursor with an oxyhalide ligand may be used, then one of ordinary skill in the art would have a reasonable expectation to believe that a tungsten precursor containing chlorides and oxyhalides as its ligands would succeed in performing the process as taught. To use the substituted precursor would have been obvious at the time the invention was made to a person having ordinary skill in the art with the expectation of achieving similar results, as discussed above.

As to claim 18, Proscia fails to explicitly teach the growth rate of the deposited film. However, to achieve maximum rate without sacrificing film quality would have been obvious and within the skill of one practicing in the art, absence evidence of criticality.

Claims 1, 2, 4-9, 17-22, 34-37, and 40-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gallego et al. (US 6,048,621) in view of Tracy et al. (US 4,687,560) and Florczak (US 6,268,019 B1).

Gallego teaches a process of coating a glass substrate during the float glass production process (column 3, lines 20-25) for forming a solar control glass (abstract) by first coating it with an underlayer of silicon, carbon, and oxygen (column 3, lines 40-45). Then a layer of tungsten oxide, in a non-stoichiometric amount, is deposited on the underlayer (abstract, column 2, lines 24-33) with a thickness of 50 nm to 500 nm (column 2, lines 43-45). Then an overlayer of fluorine doped tin oxide is deposited upon that layer (column 3, lines 50-65). The reference teaches that the stoichiometry is altered by altering the flow of oxygen, but fails to teach the precursors for depositing the tungsten oxide layer.

However, as it has been shown above, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the precursors of Tracy in order to produce the tungsten oxide layer of Gallego. By doing so, one would have a reasonable expectation of success, as Tracy teaches the art recognized suitability of suing tungsten chloride or tungsten for depositing tungsten oxides and Florczak teaches process parameters for depositing the equivalent precursors under atmospheric conditions.

As to claim 18, Gallego fails to teach the growth rate of the deposited film. However, to achieve maximum rate without sacrificing film quality would have been obvious and within the skill of one practicing in the art, absence evidence of criticality.

As to claim 43, Gallego teaches the multiple-glazing unit with the coated glass in spaced opposed relation to the glazing plane (column 4, lines 38-45).

Claims 1, 2, 5-8, 10-16, 18, 23, 34-35, 38-42, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riaz et al. (US 5,385,751) in view of Tracy et al. (US 4,687,560) and Florczak (US 6,268,019 B1).

Riaz teaches a method of coating a glass substrate (column 3, line 23) with a fluorine-doped tungsten oxide layer. The process may occur during the well-known float glass process (column 3, line 20). Riaz teaches that trifluoroacetic acid, as the fluorine source for doping, may be simultaneously added to a gas stream that comprises tungsten alkoxides and an oxygen source (column 2, line 54). Riaz also teaches a method of entraining the tungsten precursors where nitrogen is used as the carrier gas (column 3, lines 58-68).

The reference does not explicitly teach the use of the applicant's tungsten precursor. However, as it has been shown above, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the precursors of Tracy in order to produce the tungsten oxide layer of Riaz. By doing so, one would have a reasonable expectation of success, as Tracy teaches the art recognized suitability of suing tungsten chloride or tungsten oxytetrachloride in place of tungsten hexafluoride in a CVD process for depositing tungsten oxides and Florczak teaches process parameters for depositing the equivalent precursors under atmospheric conditions.

As to claims 13, 16, 38, and 39, Florczak teaches the claimed substrate temperature (column 6, lines 45-50) and precursor temperature (column 4, lines 35-40).

As to claim 18, Riaz fails to teach the growth rate of the deposited film. However, to achieve maximum rate without sacrificing film quality would have been obvious and within the skill of one practicing in the art, absence evidence of criticality.

Claims 1, 2, 8, 10-14, 17, 19, 34, 38-40, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Florczak (US 6,268,019 B1) in view of Proscia et al. (US 5,324,537), or vice versa.

Florczak teaches a method of coating a glass substrate with a fluorine-doped metal oxide layer (column 6, lines 55-65). The process may occur during the well-known float glass process (column 4, lines 50-29). Florczak teaches trifluoroacetic acid as the fluorine source for doping (column 4, lines 47-51). Oxygen sources are taught (column 4, lines 30-39). Substrate temperatures are taught (column 6, lines 45-50). The reference fails to explicitly teach depositing tungsten oxides.

Proscia teaches a method of forming fluorine doped tungsten oxide films that are applied to glass substrates during the float glass production process (column 2, lines 30-35). By doing so, a suitable solar control glass is formed (column 1, lines 25-31). A temperature range for the substrate is taught (column 3, lines 1-4). The precursor for the fluorine doping is taught (column 3, lines 33-42). The reference is silent to the precursors of the tungsten oxide film.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to deposit tungsten oxide by the method taught by

Florczak, i.e. using tungsten as the metal in the metal chloride taught. By doing so, one would reap the benefits of achieving suitable solar control, as taught by Proscia.

It also would have been obvious to use the metal chloride precursors taught by Florczak in the process taught by Proscia. By doing so, one would have a reasonable expectation of success, as Proscia teaches a process, but is silent to the precursors, and Florczak teaches precursors to a similar process.

Response to Arguments

Applicant argues that the claims have been amended such that they exclude plasma. In particular, the claims have been amended such that the process is a chemical vapor deposition. Applicant argues that a chemical vapor deposition process is different than a plasma assisted chemical vapor deposition process. This argument is not found convincing. "Chemical vapor deposition" is a broad term that encompasses any process where a gaseous phase reaction occurs and deposits a layer. This includes many types of processes, including plasma assisted chemical vapor deposition. Specifically, plasma assisted chemical vapor deposition process is a type of chemical vapor deposition. Therefore, the claims still do not exclude plasma.

Applicant argues that Tracy teaches plasma and sub-atmospheric conditions and this is irrelevant to the CVD process of the present invention. This argument is not found convincing. The claims do not have a limitation regarding pressure nor do they exclude plasma, as discussed above. Additionally, it is noted that the examiner only relies on Tracy as teaching suitable precursors for use in the process taught by Proscia.

Although Tracy teaches a plasma CVD process at sub-atmospheric pressure, the process uses tungsten hexafluoride or tungsten chloride as the precursor. Because tungsten hexaflouride may be used in the process of Tracy or Proscia, one of ordinary skill in the art would recognize that the choice of precursor, at least pertaining to metal halides, is not critical of pressure and/or the use of plasma. Furthermore, Florczak has been included to show further evidence that one of skill would recognize the suitability of using tungsten chloride in place of tungsten hexafluoride. Florczak teaches metal chlorides being decomposed and deposited at atmospheric pressure without plasma. Since tungsten is a metal, this provides further evidence of the art recognized suitability for using tungsten chloride in the process taught by Proscia.

It is noted that the rejections all rely on Tracy as a secondary reference used to show obviousness for using a tungsten chloride as a precursor in a process taught by a primary reference. The applicant fails to argue how these modifications are non-obviousness. The applicant only argues the differences of Tracy in view of Florczak with the present invention. These arguments are unconvincing as they fail to address the issues of the rejection. The primary references teach a CVD process for deposited tungsten oxides. Tracy teaches the art recognized suitability for using tungsten chloride in the primary reference.

Applicant argues the incompatibility of plasma enhanced chemical vapor deposition with chemical vapor deposition. This argument is not found convincing. One of skill in the art would be charged with the knowledge of a design engineer. This would include the knowledge that plasma assisted chemical vapor deposition is a type of

chemical vapor depositions and that like precursors may be used in either, as the chemistry of decomposing metal halides and reaction with an oxide are similar for both processes. Although process parameters may differ (temperature, pressure, deposition rate, etc.), one of ordinary skill in the art would be able to determine these parameters through routine experimentation. Plasma is used to assist the chemical vapor deposition process, not radically alter it. Thus, Tracy obviously teaches the art recognized suitability of using tungsten chlorides.

With respect to the rejection of Florczak in view of Proscia, or vice versa, applicant argues that Florczak teaches "other metallic halides" for depositing metal oxides, but provides no suggestion of using tungsten. This argument is not found convincing. Proscia teaches depositing tungsten oxides. In combining the two references, one of ordinary skill in the art would recognize that the metal in Florczak would be tungsten in order to deposit a tungsten oxide film. Additionally, the applicant has not argued the Proscia in view of Florczak rejection that is incorporated by the "vice versa" and further discussed in the rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck, can be reached at (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EBF

TIMOTHY MEEKS
PRIMARY EXAMINER